

## RIVER STAGES AND FLOODS FOR JANUARY 1947

C. R. JORDAN

Precipitation during January was above normal over most of the country east of the Mississippi River except in Florida and Wisconsin. The above-normal precipitation extended through Louisiana and southern Texas. Rainfall was particularly heavy in the central Gulf States and eastern Tennessee. Precipitation was generally deficient in the western half of the country, with many areas reporting less than half, and a large section in the Southwest less than a fourth, of the normal precipitation for January.

Floods were general in the streams from eastern Texas to North Carolina and Tennessee, and record or near-record flood heights were reached at a few places in Georgia, Alabama, and Mississippi.

*St. Lawrence drainage.*—A "flash-flood" of short duration in the St. Mary's river caused the Maumee River to exceed flood stage slightly at Fort Wayne, Ind., on January 31. There was only light overflow of a few low spots and little if any damage resulted.

*Atlantic Slope drainage.*—Flood stages were reached only at a few scattered stations in the Middle and North Atlantic States, but overflow was quite general from North Carolina through Georgia.

Rainy weather prevailed during the first 20 days of January over the South Atlantic States. Most of the rain fell in 2 periods, on the 13-14th and 18-19th. Light flood stages resulted in most coastal streams from North Carolina through Georgia as shown in the table at the end of this report.

*East Gulf of Mexico drainage.*—Floods of record-breaking proportions occurred in southern Mississippi and in the Alabama River Basin in northern Alabama and Georgia. The greatest floods in more than 50 years of record were reported in the Oostanaula and Coosa River Basins. Run-off was much above normal throughout Mississippi, Alabama, and Georgia, but flood crests were generally not record-high, and in many cases they were lower than stages reached on one or more occasions during 1946.

Heavy rainfall began over the area on December 30, 1946, and continued intermittently during the first 20 days of January 1947. The greatest January precipitation of record was measured at Jackson, Miss.

The Oostanaula River reached a crest of 33.8 feet at Resaca, Ga., on January 21. The previous highest stage of record was 33.0 feet on February 11, 1921. The maximum stage of record on the Coosa River at Gadsden, Ala., was approached but not exceeded. Moderate flood stages were reached in the middle and lower portions of the Alabama River Basin.

The upper Tombigbee River rose rapidly to flood stages during the first few days of the month, fell below flood stage on the 8th and 9th, and again exceeded flood stage from the 20th to the 23rd. At Gainesville, Ala., and below, the river rose to above-flood stages early in January and remained above flood levels the remainder of the month. Moderate flood heights were reached but damage from the floods was not extensive. Light to moderate flood stages were also reached in the Warrior River.

An unusually long period of flood stages occurred over the intermediate and lower reaches of the Pearl River, and extensive flooding occurred for lesser periods over other basins in Mississippi. Floods did not exceed previous floods of record with respect to stages reached, but the U. S. Geological Survey reported the greatest January stream flow of record.

*Ohio basin.*—Rather heavy rain over Indiana and Ohio on January 29-30, caused a rapid rise in the rivers of the area, with some light flood stages at a few stations in the Scioto, Olentangy, and Wabash River Basins.

Moderately heavy rain fell over Kentucky and Tennessee on January 1-3, averaging from 2 to 3 inches over much of the area. Some of the rain fell on frozen ground and run-off was quite rapid. Flood stages were reached on the Green River at Woodbury and Rumsey, Ky. Flood stages were also exceeded slightly on the Cumberland River at Celina, Tenn., and Eddyville, Ky.

During the first 2 weeks of January, frequent light to moderate rains occurred over the Tennessee River Valley, resulting in high run-off conditions over most of the area. Additional moderately heavy rain fell over the area during the week of January 14-20, with the heaviest amounts reported from the 18th to 20th. Total rainfall during the period January 14-20, averaged almost 5 inches over most of the basin, and more than half of the total precipitation occurred during the last 24 hours of the storm period. Local floods were reported on many of the smaller streams, particularly in eastern Tennessee. At Gatlinburg, Tenn., the Little Pigeon River flooded the streets of the town, and old residents there reported that the river was the highest they had ever seen it. Flood stages were also reached at several stations along the Tennessee River.

Property damage from this flood was confined mostly to damages resulting from flooded basements and damage to roadbeds and bridges. Most of the flood waters along the main river were confined to agricultural lowlands. At Chattanooga, Tenn., flood stage was reached at 8 p. m. on the 19th. A crest of 31.9 feet was reached late on the 20th, and the river fell below flood stage at 9 a. m., on January 22. It was necessary to evacuate several families from low-lying areas at Knoxville and Chattanooga, Tenn.

The Ohio River exceeded flood stage slightly from Newburgh, Ind., to Cairo, Ill. Only a small area of very low land was flooded and little damage resulted.

*Lower Mississippi basin.*—Flood stages were exceeded slightly on the Tallahatchie River at Swan Lake, Miss., and on the Yazoo River at Yazoo City, Miss. There was some flooding of lowlands but damage was negligible owing to the season of the year.

*West Gulf of Mexico drainage.*—Light flood stages occurred in the Gulf Coastal streams of Louisiana and eastern Texas. Stages were high most of the month and total run-off for the month was near or greater than the maximum of record on many streams.

*Pacific Slope drainage.*—Light overflow occurred at a few places in western Oregon and Washington. Stages reached were considerably lower than the heights reached by the December 1946 floods in the same area, and there was little damage.

## DECEMBER 1946 FLOOD IN THE PACIFIC NORTHWEST

Damaging floods occurred in December 1946 in scattered areas in Washington and Oregon as a result of the melting of snow and heavy rainfall during the first part of the month. Overflow was chiefly in the Umatilla River Basin, the Willamette River from Eugene to Portland, Oreg., and in the vicinity of Tacoma, Wash.

The following report of the flood in the Willamette basin was received from the Official in Charge, Weather Bureau Office, Portland, Oreg.:

Severe flooding in the Willamette Basin and tributaries began on December 13, and extended through December 18, 1946. This flooding was quite critical in many sections.

General rain that began over northwest Oregon on December 6, continued daily for the next 10 days and became moderately heavy on the 13th. Rains continued moderately heavy to early on the 15th. These moderately heavy rains accompanied by a substantial melting of snow in the Cascade Range to the east of the Willamette Valley caused widespread flooding throughout the Northwest, of particular interest to the Portland River District, in the Willamette-Cowlitz drainage areas. The rain was caused by the influx of a large body of warm, moist air, accompanied by winds of moderate velocity, overrunning an east-west oriented cold front, together with orographic lifting of the warm moist air in passing over the Cascade Mountains to the east of the valley. The freezing level on the importation of this large body of warm air lifted from a few thousand feet to a height of between eight thousand and nine thousand feet.

The cold front moved into Washington from southern British Columbia and continued its slow southern movement over Washington into northern Oregon, maintaining its east-west orientation. On reaching Oregon it developed into a north-south oscillating type of front maintaining its elongated axis in a generally east-west direction. This development caused a rather sharp dividing line between areas of moderately heavy precipitation on the lower and middle Willamette and areas of very light precipitation on the upper Willamette for a critical period of almost 12 hours during the concentration of flood waters on December 14th. This critical period of light precipitation undoubtedly saved the Eugene area from a near-repetition of the disastrous 1945 flood. These zones of moderately heavy and very light precipitation are clearly shown by the amounts of precipitation reported by representative stations on both sides of the front for the period from 7:30 a. m. to 4:30 p. m. on December 14th; stations north of the front reported from 1 to over 2 inches of rain, while to the south of the front only a few hundredths of an inch of precipitation occurred.

With few exceptions, there were no very sharp peaks at most reporting stations. The flood was characterized by two peaks on several of the larger tributaries and at stations in the upper Willamette. The second peak was generally lower at most stations, the one at Jefferson being the exception. The volume flow on several streams at lower stages was greater than that obtained with higher stages during the December 1945 flood. Comparatively rapid stream velocities developed in all rivers. The most important flow contributions occurred in the Clackamas, Luckiamute, Santiam, McKenzie, and Middle Fork Willamette, in the order listed. The peak stage at Eugene was not exceptionally high. The peak stage and volume discharge was the highest of record in the Luckiamute River at Suver, Oreg., since the establishment of the station in 1941.

Investigation reveals that the amount of tangible property damaged or destroyed was very light. There was considerable loss due to the erosion of farm lands and bank erosion of the Willamette and tributaries, and some expense for labor necessary to move merchandise or machinery or household goods out of reach of flood waters.

Flooding also occurred over northwestern Washington from December 11-16, 1946. The Snoqualmie and Snohomish Rivers were out of their banks from December

11-16, and the Green River flooded and broke through dikes in the vicinity of Kent on December 11, with the valley floor from Kent to Renton Junction remaining under water till the end of the month. There were approximately 10,200 acres inundated by the Snoqualmie and Snohomish Rivers, while the Green River inundated approximately 16,500 acres. Bankful stages were approached on the Nooksack, Stillaguamish, Skagit, and Puyallup Rivers, but no flood damage was reported. There was some light flooding in the Cedar River which damaged a bridge over the stream to the extent of several thousand dollars in the town of Renton, Wash.

Stations at which flood stage was exceeded are included in the following flood stage table for January 1947.

## FLOOD STAGE REPORT FOR JANUARY 1947

[All dates in January unless otherwise specified]

River and station	Flood stage	Above flood stages— dates		Crest <sup>1</sup>	
		From—	To—	Stage	Date
ST. LAWRENCE DRAINAGE					
Lake Erie					
	Feet			Feet	
St. Mary's: Decatur, Ind. ....	13	31	31	18.0	31
Maumee: Fort Wayne, Ind. ....	15	31	31	18.0	31
Sandusky: Upper Sandusky, Ohio. ....	13	31	31	13.0	31
ATLANTIC SLOPE DRAINAGE					
Chenango: Green, N. Y. ....	8	25	26	9.3	26
Toughnioga: Whitney Point, N. Y. ....	12	31	31	12.2	31
James: Columbia, Va. ....	10	4	6	11.9	5
Roanoke:					
Altavista, Va. ....	10	16	16	10.3	16
Weldon, N. C. ....	31	22	22	17.6	21
Scotland Neck, N. C. ....	28	24	24	37.7	23
Williamston, N. C. ....	10	26	26	30.5	24
Neuse:		18	Feb. 3	11.6	28
Neuse, N. C. ....	14	14	17	15.7	17
Smithfield, N. C. ....	13	20	24	16.6	23
Goldsboro, N. C. ....	14	15	25	16.6	22
Kinston, N. C. ....	14	19	29	16.8	24
	14	22	31	15.2	28
Cape Fear:					
Moncure, N. C. ....	30	14	14	20.4	14
	20	20	21	20.7	20
Fayetteville, N. C. ....	35	15	15	35.0	13
Elizabethtown, N. C. ....	20	15	25	29.3	25
Pee Dee:					
Cheraw, S. C. ....	30	21	22	32.4	21
Mars Bluff Bridge, S. C. ....	17	17	30	20.1	26
Saluda:					
Pelzer, S. C. ....	6	20	22	10.1	21
Chappells, S. C. ....	13	20	21	15.6	21
Broad:					
Blairs, S. C. ....	14	20	23	22.2	21
Gaffney, S. C. ....	10	20	20	10.2	20
Congaree: Columbia, S. C. ....	19	21	21	19.4	21
Catawba:					
Catawba, N. C. ....	8	21	21	10.4	21
Catawba, S. C. ....	11	20	21	15.0	21
Wateree: Camden, S. C. ....	23	21	23	28.0	21
Broad: Carlton, Ga. ....	15	20	21	19.0	21
Savannah:					
Butler Creek, Ga. ....	21	20	23	24.3	22
Burton Ferry, Ga. ....	15			21.5	25
Clyo, Ga. ....	11			19.4	28
Ocmulgee:					
Macon, Ga. ....	18	21	23	20.0	22
Abbeville, Ga. ....	11	26	(?)	13.4	28
Oconee:					
Milledgeville, Ga. ....	20	20	24	24.8	22
Dublin, Ga. ....	21	26	27	21.4	26
Mount Vernon, Ga. ....	16	27	(?)	17.3	29
Altamaha:					
Charlotte, Ga. ....	12	26	(?)	16.9	Feb. 2
Piney Point, Ga. ....	17	30	(?)	20.0	Feb. 2

Footnotes at end of table.

## FLOOD STAGE REPORT FOR JANUARY 1947—Continued

[All dates in January unless otherwise specified]

River and station	Flood stage	Above flood stages— dates		Crest 1	
		From—	To—	Stage	Date
EAST GULF OF MEXICO DRAINAGE					
Chattahoochee:	Feet			Feet	
West Point, Ga.	19	21	21	19.7	21
Norcross, Ga.	16	21	22	19.3	21
Flint: Albany, Ga.	20	27	27	20.3	27
Apalachicola: Blountstown, Fla.	15	16	( <sup>9</sup> )	20.4	26
Oostanaula:					
Resaca, Ga.	22	17	25	33.8	21
Rome, Ga.	25	20	26	34.6	22
Etowah:					
Canton, Ga.	17	20	21	21.1	21
Cartersville, Ga.	18	20	22	25.8	21
Coosa:					
Gadsden, Ala.	20	16	31	30.0	26
Childersburg, Ala.	20	20	24	26.9	21
Wetumpka, Ala.	45	20	23	49.1	21
Cahaba:					
Centerville, Ala.	23	19	22	30.9	20
Marion Junction, Ala.	36	21	24	39.6	22
Alabama:					
Montgomery, Ala.	35	20	26	47.2	23
Selma, Ala.	45	21	28	50.2	25
Millers Ferry, Ala.	40	19	Feb. 4	51.5	26
Black Warrior:					
Tuscaloosa, Ala.	47	16	23	61.6	21
Lock No. 7, Eutaw, Ala.	35	5	6	36.3	6
		16	Feb. 1	53.3	23-24
Tombigbee:					
Aberdeen, Miss.	34	3	9	38.7	5
		20	23	36.2	21
Columbus, Miss.	29	5	8	30.7	6
Gainesville, Ala.	36	7	Feb. 2	45.4	27
Demopolis, Ala.	39	4	Feb. 7	61.5	26
Lock No. 3, Ala.	33	2	Feb. 10	59.8	27
Lock No. 2, Ala.	46	5	Feb. 8	61.2	28
Lock No. 1, Ala.	31	5	Feb. 8	42.1	30-31
Leaf:					
Hattiesburg, Miss.	18	20	24	21.6	23
Beaumont, Miss.	20	21	27	24.5	24
Chickasawhay:					
Enterprise, Miss.	20	19	23	28.1	21
Shubuta, Miss.	30	19	27	39.2	23
Waynesboro, Miss.	35	22	26	39.0	24
Pascagoula: Merrill, Miss.	22	21	( <sup>9</sup> )	25.4	25
Bogue Chitto: Franklinton, La.	11	20	23	14.7	21
Pearl:					
Edinburg, Miss.	20	5	15	22.9	8
		19	27	23.9	23
Goshen Springs (near), Miss.	20	9	30	23.2	25
Jackson, Miss.	18	4	( <sup>9</sup> )	30.6	20, 23, 27
Monticello, Miss.	15	15	( <sup>9</sup> )	25.0	21
Columbia, Miss.	17	16	( <sup>9</sup> )	24.3	22
Pearl River, La.	12	6	( <sup>9</sup> )	16.4	26
MISSISSIPPI SYSTEM					
Ohio Basin					
Olentangy: Delaware, Ohio.	9	31	31	9.6	31
Scioto:					
LaRue, Ohio.	11	31	( <sup>9</sup> )	12.6	31
Circleville, Ohio.	14	31	( <sup>9</sup> )		
Piketon, Ohio.	15	31	( <sup>9</sup> )		
Green:					
Woodbury, Ky, Lock No. 4	33	4	8	37.2	5
		7	10	34.9	8
Runsey, Ky, Lock No. 2	34	25	25	34.1	25
West Fork:					
Anderson, Ind.	10	31	( <sup>9</sup> )		
Elliston, Ind.	18	31	( <sup>9</sup> )		
Edwardsport, Ind.	12	31	( <sup>9</sup> )		
East Fork: Seymour, Ind.	14	31	( <sup>9</sup> )		
Wabash: Wabash, Ind.	12	30	( <sup>9</sup> )		
Cumberland:					
Celina, Tenn.	28	3	7	37.4	6
		18	25	34.8	27
Lock F, Eddyville, Ky.	50	6	10	51.2	9
		23	29	52.6	27
Tennessee:					
Chattanooga, Tenn.	30	19	22	31.9	20
Florence, Ala.	18	18	26	23.6	20
Pickwick Dam, Tenn.	43	19	27	48.6	20
Savannah, Tenn.	39	16	Feb. 2	42.1	22

Footnotes at end of table.

## FLOOD STAGE REPORT FOR JANUARY 1947—Continued

[All dates in January unless otherwise specified]

River and station	Flood stage	Above flood stages— dates		Crest <sup>1</sup>	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM—continued					
Ohio Basin—Continued					
Ohio:	<i>Feet</i>			<i>Feet</i>	
Dam No. 47, Newburgh, Ind.....	38	25	27	38.6	26
Dam No. 50, Fords Ferry, Ky.....	34	23	31	37.9	27
Paducah, Ky.....	39	26	28	39.2	28
Dam No. 52, Brookport, Ill.....	37	21	Feb. 1	40.8	28
Dam No. 53, Grand Chain, Ill.....	42	23	Feb. 1	44.6	28
Calro, Ill.....	40	25	31	41.2	28
White Basin					
White:					
Clarendon, Ark.....	26	Dec. 19	5	28.6	Dec. 24-
St. Charles, Ark.....	25	Dec. 23	8	26.8	25
				26.5	Dec. 28-
Lower Mississippi Basin					
Tallahatchie:					
Swan Lake, Miss.....	26	7	( <sup>9</sup> )	28.3	26
Yazoo City, Miss.....	29	25	( <sup>9</sup> )		
WEST GULF OF MEXICO DRAINAGE					
Nezperque: Basile, La.....	22	20	24	23.4	22
Mermentau: Mermentau, La.....	5	15	26	6.1	18, 20
Calcasieu: Kinder, La.....	16	19	19	16.8	19
		21	26	20.6	22
Sabine:					
Bon Wier, Tex.....	17	3	( <sup>9</sup> )	21.4	21-22
Mineola, Tex.....	14	18	25	16.3	22
Neches:					
Rockland, Tex.....	22	20	21	22.1	21
Evadale, Tex.....	16	13	Feb. 4	17.9	25
East Fork: Rockwall (nr.), Tex.....	10	18	19	11.1	18
Trinity:					
Trinidad, Tex.....	28	20	20	28.2	20
		Dec. 29	6	25.7	4
Liberty, Tex.....	24	11	12	24.2	11
		18	30	26.5	22
Guadalupe: Victoria, Tex.....	21	20	21	21.6	21
PACIFIC SLOPE DRAINAGE					
Columbia Basin					
McKenzie:					
Leaburg, Ore.....	12	Dec. 13	Dec. 16	19.9	Dec. 14
		26	26	13.6	26
Coburg, Ore.....	11	Dec. 13	Dec. 16	14.4	Dec. 14
Hendricks Bridge, Ore.....	13	Dec. 15	Dec. 15	13.0	Dec. 15
Santiam: Jefferson, Ore.....	13	Dec. 12	Dec. 17	21.2	Dec. 15
		25	27	15.7	26
South Yamhill:					
Williamina, Ore.....	8	Dec. 12	Dec. 15	11.6	Dec. 15
Whiteson, Ore.....	38	Dec. 14	Dec. 17	41.2	Dec. 15
Tualatin: Dilley, Ore.....	12	Dec. 13	Dec. 16	12.6	Dec. 15
		26	26	12.3	26
Willamette:					
Eugene, Ore.....	12	Dec. 14	Dec. 14	13.6	Dec. 14
Harrisburg, Ore.....	12	Dec. 13	Dec. 17	17.9	Dec. 15
		27	28	13.5	27
Corvallis, Ore.....	24	Dec. 16	Dec. 17	25.6	Dec. 16
Albany, Ore.....	20	Dec. 15	Dec. 18	25.8	Dec. 16
Salem, Ore.....	20	Dec. 15	Dec. 18	26.7	Dec. 16
Oregon City, Ore.....	12	Dec. 15	Dec. 20	16.2	Dec. 17
Portland, Ore.....	18	Dec. 15	Dec. 19	21.3	Dec. 17-
FUGET SOUND DRAINAGE					
White: Buckley, Wash.....	806.8	11	15	807.5	11
Puyallup: Electron, Wash.....	7.8	11	11	8.0	11
Green: Auburn (nr.), Wash.....	65.7	11	12	68.4	11
Snoqualmie: Tolt, Wash.....	51.8	Dec. 23	Dec. 26	56.2	Dec. 24
		11	16	56.2	14
Stillaguamish:					
Arlington (nr.), Wash. (N. Fork) ..	10.8	11	11	12.0	11
Arlington (nr.), Wash. (S. Fork) ..	20.8	11	11	20.9	11

<sup>1</sup> Provisional.<sup>2</sup> Continued at end of month.